

\* At least the inner bracts of the involucre with the keels thickened near the tips forming corniculate appendages: heads about 75-flowered, yellow: achenes reddish: leaves deeply and finely runcinate-pinnatifid.

T. ERYTHROSPERMUM, Andrz. Usually in dry soil, common in the coastal district, less so inland.

\* \* All (or nearly all) the bracts flat and unappendaged: heads larger, orange yellow: achenes greenish or brown: leaves less cut.

T. OFFICINALE, Weber. Outer bracts of the involucre lanceolate or linear-lanceolate, strongly reflexed even in bud. — Common and widely distributed.

Var. PALUSTRE, Blytt. Norg. Fl. i. 619 (*Leontodon palustris*, Smith, Fl. Brit. ii. 823. *Taraxacum palustre*, DC. Fl. Fr. iv. 45). Outer bracts shorter and broader, mostly ovate-lanceolate or deltoid, ascending. — Damp soil, Maine, Vermont, Massachusetts, and Connecticut; and probably throughout.

GRAY HERBARIUM.

## MISCELLANEOUS NOTES ON NEW ENGLAND FERNS,— V.

GEORGE E. DAVENPORT.

### NOTE 8.— *Supplementary.*

WOODSIA OBTUSA, Torrey. This fern should be added to my list in RHODORA, vol. 4, p. 49, as number 18 under C. For this year I found sterile fronds wholly green as late as March 2nd. Miss Slosson says of it: "Fertile fronds perishing in autumn, sterile fronds lasting into winter, decaying toward spring." Ledges. Me., N. H., Vt., Mass., R. I., Ct.

Mr. Gilbert has suggested the propriety of including *Onoclea sensibilis* and *Struthiopteris* in the list on account of the perennial duration of the fertile fronds.

*Correction.* — Dr. Graves, of New London, Connecticut, has called my attention to an error in crediting *Asplenium montanum* to limestone cliffs in Connecticut, and I gladly make the proper correction here. I shall always be glad to have any errors of mine pointed out and thankful to anyone who will call my attention to them so that I can make such corrections as may be necessary.



NOTE 9.—SOME FURTHER OBSERVATIONS ON NEPHRODIUM. The substance of the following note was prepared for the March RHODORA in order to define more clearly my views on *Nephrodium* and its combinations, but has been withheld from publication pending the result of efforts to obtain some definite information regarding the work ("Hort. Med. Par. Cat.") cited without author for the genus *Nephrodium* by Richard in Michaux's Flora. Dr. Robinson, when consulted in regard to the matter, rightly surmised that the reference must allude to a rare publication by Marthe. Efforts to find a copy of this work in America, however, proved ineffectual and it is through the courtesy of Professor Édouard Bureau, Director of the Museum of Natural History in Paris, where the work exists, that I am now able to present the readers of RHODORA with an authentic copy of the title-page and that part of the work which relates to Nephrodium. I give the matter as it occurs in a letter from Professor Bureau to Dr. Robinson and as it concerns the earliest reference to one of the larger genera of ferns it cannot fail to interest fern students at the present time. The title page runs:

Catalogue des Plantes du Jardin Medical de Paris, disposées selon le système de Linné, avec l'explication de quelques changements faits à la système. Publié par François Marthe, cultivateur du dit Jardin. À Paris, chez Gabon, Libraire, rue et place de l'École de Médecine. An IX.

Upon the above title Professor Bureau comments as follows: Au dessous des mots: du dit Jardin est écrit à la main: *et fait par L. C. Richard de l'institut*. Nous pensons que ces deux lignes sont écrites par un employé de la bibliothèque, au moment de la donation. Sous la ligne: An IX, on a écrit 1801. Sur la première feuille, il y a ces mots écrits: *Donné par l'auteur fructidor an 9e*; et sur le 3me feuille, on voit encore écrit: *L'auteur à la bibliothèque du Muséum national d'Histoire naturelle*. Ces deux inscriptions paraissent être de la main de Louis Claude Richard, sans que je puisse l'affirmer positivement.

Concerning the brief reference to *Nephrodium* Professor Bureau continues: À la page 120, je trouve dans le texte: — NEPHRODIUM FILIX MAS. *Néphrode Fougère mâle*. Votre supposition se trouve donc vérifiée.

This communication from Professor Bureau is invaluable as it fully establishes the identity of the "Hort. Med. Par. Cat." cited by



Richard in Michaux with Marthe's Catalogue. The latter is given in Pritzel's "Thesaurus" both editions, the earlier one (1851) containing the full title exactly as here given. In Pfeiffer's Nomenclator (i. pt. 1, p. 449) the work is cited for *Botrypus* (*Botrychium*) in the same form as by Richard in Michaux and in the octavo edition of his "Nature Printed Ferns" (1859), under *Lastraea Filix-mas*, Moore also cited it in the same way for *Nephrodium Filix-mas*, Richard, giving the page (120) and date (1801) correctly.

This effectually disposes of a recent declaration that *Filix-mas*, was first placed in *Nephrodium* by "Hooker in 1862-1874"! The record here presented shows clearly enough that it was so placed by Richard himself in 1801. Desvaux also cited *Nephrodium Filix-mas*, Richard, in 1828 (Mem. Soc. Linn. vi. p. 60, see Eaton, Ferns of N. Amer. i. p. 312), thirty-four years before Hooker's use of it!

We have now a well authenticated record showing, first, the publication of *Nephrodium* two years before its publication in Michaux; and second, the publication of a generic and specific combination, which complies with that portion of the fifth rule in the Rochester Code which declares that "the publication of the *name* of the genus and the citation of one or more previously published species as examples or types of the genus with or *without* a diagnosis" shall constitute publication of a genus.

The assumption that *Nephrodium* equals *Polystichum* because *N. acrostichoides* the first species mentioned in Michaux proved to be a *Polystichum*, is thus shown to be untenable, even on the basis of those who believe that the first species under a complex genus must be taken as the type, as we have here the earlier publication of *N. Filix-mas*, fortified by the addition of the three species from Michaux and the additional historic fact that "the early writers did not always name the most typical species first." The principle of the first species fixing the type of a complex genus is altogether modern, and one that I have no where "professed" to accept notwithstanding a recent assertion to the contrary. There is, I conceive, a great difference between "the first species under a genus" and the first *correctly named* species, the latter being the form of expression which I have used. In the other form the principle has been rejected even by Dr. Britton (Science xiii. 588; 1901). It is extremely doubtful if any of the old authors ever gave a thought to the arrangement of species with any such a purpose in view, and when there is



more than one species mentioned, the first which conforms to the requirements of the genus should be sufficient to hold it. A case in point occurs in *Athyrium*, where in seven species mentioned by Roth, only one (*A. Filix-foemina*), and that the sixth, conformed to the requirements of the genus, yet that one is universally accepted as the type for *Athyrium*, whether considered as an independent genus, a sub-genus, or a mere section.

As an example of how little the early authors thought about this matter it may be stated that Presl, in his *Tentamen Pteridographiae* after citing Schott for *Aspidium* named his own species (*Plumieri*) first, although Schott had figured and cited *A. trifoliatum* for Swartz's type.

Here we have one of those illogical treatments where a name is transferred from its original author to another merely because that other reduces or enlarges its application. Schott illustrated Swartz's *Aspidium* from a typical species, and although he himself cited Swartz as authority, Presl subsequently cited him as authority. Now if Presl was justified in citing Schott for *Aspidium*, subsequent authors would be justified in citing *Aspidium*, Presl, as his treatment was different from Schott's. The common sense view would therefore seem to be to anchor a generic name to its original author whether its application be reduced or enlarged as the right of an author to his own should remain intact. It is of course to be expected that generic limitations should expand or contract with the varying conditions of knowledge, and especially through augmentation by additional species with slight deviations from the original characters, but otherwise congeneric.

This has been the case with *Nephrodium* which was founded on the character of the indusium, and apparently for the express purpose of separating the kidney-shaped from the peltate form; and no subsequent treatment has destroyed the force of this one character for which *Nephrodium*, Richard, stands to-day, exactly as it did more than one hundred years ago.

In tracing the further history of the genus down to the present time we find that Swartz in 1806 (*Synopsis Filicum*) merged *Nephrodium* into his *ASPIDIUM*, where it is still retained by some of the very best authorities. In 1810 Robert Brown published in his *Prodromus* a list of New Holland ferns under *Nephrodium*, which he separated from *Aspidium*, but without giving Richard credit for the genus as



he ought to have done. Here for the first time we have the introduction of two species, *N. unitum*, R. Br., and *N. molle*, R. Br., with the lower series of veins in the lobes connivent, but otherwise certainly congeneric with Richard's original species. Brown, however, paid no attention to the venation, and as his treatise was devoted to the consideration of New Holland ferns only his list comprises a different set of species from Richard's.

The genus continued to expand through the addition of other species with connivent veins until 1824, when Bory attempted to separate it into two divisions, retaining the connivent-veined species under *Nephrodium*, and proposing a new genus, *Lastraea*, for the species with free veins, thus exactly reversing what would have been the proper treatment, as Richard's original species were free-veined.

Bory's proposed genus does not appear to have been well received, but his most unwarrantable division of *Nephrodium* was carried still further in 1832 by Schott, who, in his *Genera Filicum*, figured *N. molle*, R. Br., for the type of *Nephrodium*, an error which was repeated in 1836 by Presl in his *Tentamen Pteridographiae*, where, for the first time, the ferns were comprehensively treated on the basis of the character of the venation in conjunction with that of the fructification.

In that work Presl cited Schott as authority for *Nephrodium*, although the latter clearly had no intention of appropriating the name to himself as he cited Richard for it. Presl also cited Schott as authority for *N. molle*, notwithstanding the fact that Robert Brown (l. c.) had published the combination in 1810.

Not, however, until this work of Presl, had any attention been paid to the character of the venation, which did not therefore enter into previous considerations as a factor in the determination of genera. Therefore it was not surprising that Richard's genus should have become so much enlarged by the addition of connivent and netted-veined species as to make some kind of division, if only sectional, desirable. The really surprising thing about it is that when such division was deemed necessary, the free-veined species, which were characteristic of the original types should have been set aside and under another name assigned to an author who had nothing to do with the original genus.

Presl resuscitated Bory's *Lastraea*, changing the orthography to *Lastrea*, and assigning to it all of the free-veined species, which, as



we have seen, properly represented the original forms of *Nephrodium*; yet singularly enough among the species so referred we find two, *L. patens* and *L. tetragona* with connivent veins!

At the same time Presl proposed two additional genera, *Pleocnemia* for the species having some of the veins in the same as well as contiguous groups united and *Sagenia* for those with the veins copiously anastomosing, thus dividing *Nephrodium* into four genera. These were subsequently reduced to subgenera, or sections by Sir William Jackson Hooker, who, while substantially adopting Presl's arrangement, treated *Nephrodium* as one comprehensive genus based on the original character of the indusium, retaining *Lastrea* for the free-veined, and establishing his own *Eunephrodium* for the connivent-veined section.

The order of arrangement adopted by Hooker in *Genera Filicum* placed *Eunephrodium* in the first section with Schott as authority, for the section only, but in *Species Filicum* Richard is cited as authority for the whole genus. In *Synopsis Filicum* of Hooker and Baker, the order of arrangement was changed so as to place the free-veined section first, thus practically restoring the original form of Richard's genus, and this form has continued to the present time, so that it is not too much to say that there has been an almost uninterrupted use of *Nephrodium* since its first establishment by Richard in 1801.

Now in this early publication of *Nephrodium Filix-mas* by Richard we have just such a generic name and example; and no advocate of the Rochester code can consistently reject it. It is, moreover, fortified by the well-known vernacular name "Fougère mâle" which accompanies it, and made absolute by the addition of three more species from Michaux's Flora that are congeneric.

As *Nephrodium Filix-mas* is thus shown to be the earliest *Nephrodium* known, it not only fixes the initial date for the genus at 1801, but, as it antedates *N. acrostichoides*, it effectually disposes of the argument of those who claim that *Nephrodium* equals *Polystichum* because *N. acrostichoides*, erroneously supposed to be the earliest species, belongs to the latter genus.

The absence of *N. Filix-mas* from Michaux's Flora was perfectly natural, as it was not at that time known to be one of the North American plants with which alone Michaux's Flora was dealing.

Here then we have, first, the authentication of Richard's earlier



use of *Nephrodium* as per his citation in Michaux, second the verification of Moore's citation for *N. Filix-mas*, and third, a type that is not a *Polystichum* although Adanson described it as such ("envolucre enparasol.")

However as *Filix-mas* is the species upon which *Dryopteris* is assumed to rest let us briefly consider the relative position of that genus and *Nephrodium* with regard to it.

*Dryopteris*, although derived from the earlier pre-Linnaean name (*Druopteris*) of Dioscorides, dates from Adanson (1763), *Nephrodium* from Richard (1801), and this gives to the name *Dryopteris* a priority in time. But the name *Dryopteris* was not used again by any author for more than seventy years after its use by Adanson and this, according to the Berlin Rule<sup>1</sup> which is now accepted by many conservative botanists, relieves us of any obligation to take such a name up now. Furthermore Adanson's description does not apply to the species mentioned in connection with it, and the result is an incongruous combination, which is not entitled to serious consideration. If we put this to a test by analysis we will have some such form as this:—

DRYOPTERIS:— "*enveloppe enparasol*" i. e. indusium peltate, with uninterrupted margin, the attachment being strictly central.

*Example*:— *Filix-mas*, indusium *cordate-reniform*, i. e. with the margin deeply cleft on one side into a definite sinus with the attachment at its base, thus appearing one-sided instead of central.

*Result*, a disagreement.

Now the interpretation of "enparasol" admits of only one meaning and it has never had any other than the one which represents a lady's sunshade—a parasol, or an umbrella, and no one has ever known a parasol to have its handle otherwise than in the centre, or to have its rim divided. It is impossible to reconcile the disagreement that we have here, and I know of no better characterization for a genus with its description standing for one thing and its *type* (!) for another than the one I have previously used of being ill-defined. It is not enough to say that Adanson intended to describe *Filix-mas*, the fact that he did not do so correctly is beyond dispute. Besides, no subsequent author used *Dryopteris* until Schott, in 1834 (71 years

<sup>1</sup>As this rule, which is known as the fifty year limit, has been much misrepresented of late, it may be well to explain here that it has nothing whatever to do with species, but applies to genera only.



afterward) used *Dryopteris Filix-mas* as a *synonym* under *Polystichum*, thus giving rise to the later synonym of *Dryopteris Filix-mas*, Schott, and yet Schott never *adopted* the genus! Now if Adanson established *Dryopteris* on *Filix-mas*, the proper combination should be *Dryopteris Filix-mas*, Adanson, and that would serve to render the disagreement which has been pointed out still more conspicuous. But in considering the claims of *Nephrodium* we have an entirely different state of affairs. We have here a combination properly published with a reference that makes the species selected typical of the genus, and within two years a reaffirmation of the generic name accompanied by a fuller description that defined the character of the fructification as the one special generic character, and in this sense the genus has been maintained by good authorities from that time to this exactly as I have before stated in my notes.

The Swartzian genus *Aspidium* comprised two well marked divisions each characterized by the presence of a definite form of the indusium sufficiently constant to constitute an almost absolute line of separation, the exceptions being either accidental, or temporary, and not of sufficient frequency to affect the general result. Both have circular sori but in one the indusium is round with entire margin, the attachment showing exactly in the centre, thus forming the *peltate indusium*, which exactly corresponds to Adanson's description "*enparasol*," and constituting the basis for *Aspidium* as reduced, *Polystichum* or *Tectaria*; in the other the margin of the indusium is incised with the attachment apparently one-sided, and forming the one special character, the *cordate-reniform indusium*, upon which *Nephrodium* rests.

The question of the venation is really another matter. There being only free-veined species in our New England ferns, with which alone these notes are dealing, it has not seemed to me necessary to do more than to bring out the historic fact that the early species had free veins, in order to show the true characters of the original species. No account, however, was taken of this fact by Richard, and the presence of free veins in the original species may be taken as an accidental coincidence which does not change the original indusial character on which the genus was based. The subsequent expansion of the genus by the addition of species with connivent veins was a perfectly natural one and cannot vitiate its claims to recognition. Neither can any objection, based on the "*melange*" which Richard



placed in the genus, have any weight, as it would act with equal force against nearly all of the early fern genera, especially the Linnaean *Polypodium* and *Asplenium*, which were quite as badly mixed up as Richard's *Nephrodium*.

In tracing out the historic evolution of *Nephrodium* from its publication in Marthe's Catalogue in 1801, it is interesting to note the fact that Richard's name does not appear at all in connection with the reaffirmation and enlargement of the genus in Michaux's Flora in 1803, an omission which probably led to the habit of citing Michaux as authority, at least for the original combinations. There would seem however, to be little doubt that Richard elaborated the ferns in Michaux's Flora. Pritzel's references to the matter are somewhat indefinite, and the only certain inference that can be drawn from them is the fact that Michaux and Richard were collaborators in the preparation of the Flora, and as Richard was known to have been the cryptogamic botanist, the inference that he was responsible for the treatment of the ferns is unavoidable.

Consequently if Richard was the real author of that portion of the work it is only right to credit him with such combinations as occur under *Nephrodium*. In accordance with this reasoning I have, in my notes, cited Richard as authority for combinations usually credited to Michaux.

Now in Michaux's Flora we have three species, *Nephrodium Novboracense*, Desvaux, *marginale*, Richard, and *cristatum*, Richard, that are congeneric with *Filix-mas* and we may justly claim that the genus is thoroughly grounded on a substantial basis.

This is true whether we write Brown, Schott, Presl, Smith or Hooker as authorities for subsequent changes. One fact stands out clear and indisputable, and that is that the Swartzian group of *Aspidiums* consists of two distinct types in the character of their indusia, and *Nephrodium* has been used in the Richardian sense for the type with cordate-reniform indusia for more than a century exactly as I have stated.

The treatment of the genus abroad has been more or less variable according to the views of different authors, and in this country it has, until quite recently, been used in accordance with the views of Mettenius as approved by Prof. Eaton. Of late, however, there has been an increasing tendency to recognize the independence of *Nephrodium*, and this I believe will become more and more universal.



It has been in use by Shimek for a long time. Mr. Gilbert has adopted it, and Mr. Clute has signified his intention of doing so for the future. More recently Mr. House, and now Prof. Waters has adopted it in his admirable Analytical Key for the Ferns of the North-eastern States Based on the Stipes. As against *Dryopteris* its claims are twofold:— first, the derivation of its name— from νεφρος (nephros) referring to the kidney form of indusium— exactly indicates its generic character; second, it rests upon at least four clearly defined species that accurately represent the generic characters.

Finally we may sum up the various points of this article as follows:— (1) *Nephrodium* as a genus has been in existence for more than one hundred years (2). With the exception of the brief period of four years intervening between Swartz's reference of it to *Aspidium* in 1806, and its restoration by Robert Brown in 1810, it has been recognized in one form or another from the time of its original publication to the present. (3) Having been established on a special character the subsequent addition of other characters could not destroy the force of the original.

What I wish most to emphasize here is this:—*Nephrodium* rests primarily on the character of its indusium. The nature of its venation had nothing to do with its original definition. In subsequent revisions, based on new sets of characters in which the venation had become prominent, the character of the original species should have been considered as typical of the genus. The fact that this was not always done, however, does not deprive us of the right to maintain the genus in its present form.

MEDFORD, MASSACHUSETTS.

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SOME ADDITIONS TO THE FLORA OF MASSACHUSETTS.— On the 29th of May of this year Mr. Ezra Brainerd and I found a large colony of bushes of *Crataegus scabrida*, Sargent, near the banks of a small stream some two miles west of Williamstown. This appears to have been the first time that this common Vermont species has been noticed in Massachusetts. On the same day we found *Crataegus asperifolia*, Sargent, along the road between Williamstown and North Adams. This is also a new plant for Massachusetts. The following day we saw near the summit of a high rock close to the main street